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March 10, 2005
Date

Mark B. Wilson

**PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
JOHNSTON ET AL.

Serial No.: 10/023,437

Filed: DECEMBER 17, 2001

For: METHODS AND COMPOSITIONS FOR VACCINATION COMPRISING NUCLEIC ACID AND/OR POLYPEPTIDE SEQUENCES OF CHLAMYDIA

Group Art Unit: 1635

Examiner: FORD, VANESSA L.

Atty. Dkt. No.: UTSD:736US/MBW

## DECLARATION OF AKIRA TAKASHIMA, M.D., PH.D.

I, Akira Takashima, M.D., Ph.D., hereby declare as follows:

1. I am a Professor at the University of Texas Southwestern Medical Center. I have extensive experience in the fields of immunology and molecular biology. References containing examples of my work are included in my *Curriculum Vitae*. A copy of my *Curriculum Vitae* is attached as Exhibit 1.

2. I have reviewed relevant documents relating to the above-referenced patent application. Specifically, I have reviewed the Office Action dated November 10, 2004, the specification of

the application, the pending claims, and the amended claims. In light of these documents, and my knowledge of immunology and molecular biology, I make the following statements.

3. I understand that the claims in this application relate to methods of immunizing an animal comprising providing to the animal at least one *Chlamydia psittaci* antigen in an amount effective to induce an immune response against *Chlamydia psittaci.*

4. I also understand that the Examiner has rejected several claims of the application on the grounds that the specification is not enabling for all antigenic fragments of SEQ ID NOs: 7, 9, 11, and 13 encompassed by the claims. I do not find this to be the case.

5. Based on my experience and knowledge in the fields of immunology and molecular biology, I believe that a scientist of standard skill in immunology or molecular biology would be capable of eliciting an immune response in an animal against *Chlamydia psittaci* using a number of antigenic fragments of SEQ ID NOs: 7, 9, 11, and 13 by following the teachings in the specification.

6. The present specification describes an "antigenic fragment" as a fragment that can elicit an immune response in an animal (p. 13, ln. 19-20). The specification provides further description of "fragments" of the SEQ ID NOs: 7, 9, 11, and 13 at page 13, lines 9-18. Based on these descriptions, a person of standard skill in molecular biology or immunology would understand an antigenic fragment of SEQ ID NOs: 7, 9, 11, or 13 to refer to a fragment of at least 5 contiguous amino acids of SEQ ID NOs: 7, 9, 11, or 13, but fewer than the full length of SEQ ID NOs: 7, 9, 11, or 13, capable of eliciting an immune response in an animal.

7. I have reviewed the data presented in Examples 1 through 12 of the present specification. These data show, among other things, that the 443 amino acid polypeptide of SEQ ID NO: 9 can be used to immunize an animal (*see e.g.*, p. 75, Table 3; p. 80, ln. 2-6). Furthermore, these data show that a 149 amino acid fragment (SEQ ID NO: 7) of SEQ ID NO: 9 can also be used to immunize an animal (*see e.g.*, p. 75, Table 3; p. 80, ln. 2-6). Based on these results, a scientist will understand that there would likely be other antigenic fragments of SEQ ID NO: 9 and SEQ ID NO: 7 that would elicit an immune response in an animal.

8. The data in the present specification also show that the 100 amino acid polypeptide of SEQ ID NO: 13 can be used to immunize an animal (*see e.g.*, p. 75, Table 3; p. 80, ln. 2-6). In addition, a 41 amino acid fragment (SEQ ID NO: 11) of SEQ ID NO: 13 can also be used to immunize an animal (*see e.g.*, p. 75, Table 3; p. 80, ln. 2-6). Based on these results, a scientist will understand that there would likely be other antigenic fragments of SEQ ID NO: 11 and SEQ ID NO: 13 that would elicit an immune response in an animal.

9. The present specification provides guidance for making and evaluating antigenic fragments of SEQ ID NOs: 7, 9, 13, and 11. First, the specification provides the nucleic acid and amino acid sequences of these antigens as a starting point from which a scientist could make other antigenic fragments. As described in the specification, it is also known that certain amino acids may be substituted for other amino acids in a protein structure without appreciable loss of interactive binding capacity with antigen-binding regions of antibodies (p. 26, ln. 18-20).

10. Furthermore, it is also known to scientists in the fields of molecular biology and immunology that immunogenic proteins typically contain multiple immunogenic epitopes or determinants. A scientist of standard skill would be capable of identifying antigenic fragments of

SEQ ID NOs: 7, 9, 11, and 13 by following the teachings in the specification. For example, as described in the present specification at page 25, lines 8-20, antigenic determinants of a polypeptide may be identified by preparing a range of cDNAs encoding peptides lacking successively longer fragments of the C-terminus of the polypeptide. The immunogenic activity of each of these peptides then identifies those fragments or domains of the polypeptide that are essential for antigenic activity. Further experiments in which only a small number of amino acids are removed or added at each iteration then allows the location of other antigenic determinants of the polypeptide. Scanning a full-length antigenic polypeptide for antigenic epitopes or determinants is routine in the field of immunology. Thus, a scientist of standard skill in molecular biology or immunology could identify antigenic fragments of SEQ ID NOs: 7, 9, 11, and 13 using only routine screening techniques as described in the present specification.

11. In conclusion, a molecular biologist or immunologist could practice the presently claimed invention using antigenic fragments of SEQ ID NOs: 7, 9, 11, or 13 by following the teachings of the present specification.

12. I declare that all statements made of my knowledge are true and all statements made on the information are believed to be true; and, further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under § 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent issued thereupon.

Date: 2-23-05

Akira Takashima, M.D., Ph.D.

# CURRICULUM VITAE
## Akira Takashima, M.D., Ph.D.

**Date of Birth:** February 24, 1954

**Place of Birth:** Gifu, Japan

**Marital Status:** Married, 1 child

**Nationality:** Japanese

**Visa Status:** Permanent Resident

**Present address:**
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**Degrees:**
M.D. Nagoya City University, 1981
Ph.D. Nagoya City University, 1989

**Education:** 1975 - 1981 Nagoya City University Medical School, Nagoya, Japan

**Research and Professional Experience:**

| | |
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| 1981-1982 | Resident, Department of Dermatology, Nagoya City University Medical School Nagoya, Japan |
| 1982-1983 | Faculty ("joshu"), Department of Dermatology, Nagoya City University |
| 1983-1985 | Research Fellow, Department of Cell Biology, UT Southwestern Medical Center |
| 1985-1986 | Research Fellow, Department of Dermatology, UT Southwestern Medical Center |
| 1986-1991 | Faculty ("joshu"), Department of Dermatology, Nagoya City University |
| 1990-1992 | Visiting Assistant Professor of Dermatology, UT Southwestern Medical Center |
| 1992-1994 | Assistant Professor of Dermatology, UT Southwestern Medical Center |
| 1994-1996 | Associate Professor of Dermatology, UT Southwestern Medical Center |
| 1997-Present | Professor of Dermatology, UT Southwestern Medical Center |
| 1997-Present | Director of Cutaneous Biology Laboratory, UT Southwestern Medical Center |
| 1998-Present | Vice Chairman for Research, Dermatology, UT Southwestern Medical Center |
| 1999-2001 | Director for Immunodermatopathology Fellowship Training, Dermatology UT Southwestern Medical Center |
| 1999-Present | Thomas L. Shields, M.D. Professorship, UT Southwestern Medical Center |
| 1992-Present | Faculty of Immunology Program, Graduate School of Biomedical Sciences |

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1999-Present Faculty of Molecular Microbiology Program, Graduate School of Biomedical Sciences
UT Southwestern Medical Center

2002-Present Professor of Internal Medicine, Center for Biomedical Inventions
UT Southwestern Medical Center

**Membership in Academic Societies:**
American Society for Clinical Investigation
American Association for Cancer Research
American Association of Immunologists
American Federation of Clinical Research
American Society for Photobiology
Society for Investigative Dermatology
Molecular Medicine Society
Japanese Society for Investigative Dermatology
Japanese Dermatological Association
New York Academy of Sciences

**Awards and Honors:**
CE.R.I.E.S. Award (1996)
American Society for Clinical Investigation (1998)
William Montagna Lectureship (2004)

**Editorial Responsibilities:**

1997-2001 Associate Editor, *Journal of Immunology*
2001 Volume Editor, *Chemical Immunology*, Vol 79:γδ T cells
2000-present International Advisory Board, *Journal of Dermatology*
2001-present Section Editor, *Journal of Immunology*
2002-present Associate Editor, *Journal of Investigative Dermatology*
2002-present Regional Editor, *Journal of Dermatological Science*

**Scientific Activities:**

1997-2000 Medical and Scientific Committee, Dermatology Foundation
2002-2003 Scientific Advisory Board, National Alopecia Areata Foundation
2001-present Scientific Program Committee, Society of Investigative Dermatology

**Patents:**

1. Unique Dendritic Cell-Associated C-Type Lectins, Dectin-1 and Dectin-2; Compositions and Uses Thereof:
**A Takashima**, Ariizumi K. US Patent Number 6046158, 4/4/00

2. Modulators of Polysaccharides and Uses Thereof: US Patent Number 6,653,285, 11/25/03
**A Takashima**, ME Mummert, M Mohamadzadeh

3. Hybrid Dendritic Cells to Induce Antigen-specific Modulation of the Immune System:
H Matsue, **A Takashima** US Patent Application Serial No. 09/536,176

4. Transcription Factor Inhibitors to Prevent and/or Treat Radiation-Induced Skin Changes:
K Abeyama, PR Bergstresser, **A Takashima** US Patent Application Serial No. 09/534,837

5. Inhibitors of Glycosamingolycans
M Mummert, **A Takashima** US Patent Application Serial No. 09/532,709

6. Diagnosis and Treatment of Inflammation
T Kumamoto, N Mizumoto, **A Takashima** Provisional Patent Application filed March 1, 2001

7. *In Situ* Langerhans Cell Vaccine
**A Takashima**, T Kumamoto US Patent Application Serial No. 09/808,555

8. Ebselen as a Therapeutic for Preventing Diseases Associated with Dendritic Cell
**A Takashima** Provisional Patent Application filed March 28, 2003

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### Original Articles


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2. **Takashima A**, Grinnell F: Human keratinocyte adhesion and phagocytosis prompted by fibronectin. *J Invest Dermatol* 83:352-358, 1984.

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11. **Takashima A**, Yasuda S, Mizuno N: Development of phototherapy for acute carbon monoxide intoxication. *Suzuken Memorial Foundation* 108-113, 1988 (in Japanese).

12. **Takashima A**, Matsunami E, Yamamoto K, Mizuno N: Topical PUVA therapy using a whole body UVA irradiating unit, Dermaray M-DMR-TS. *Nishinihon Hifuka* 51:329-334, 1989 (in Japanese).

13. **Takashima A**: Effect of UV irradiation on plasminogen activator production by PAM 212 cells. *Nagoya City University Medical Journal*. 40:173-179, 1989 (in Japanese).

14. **Takashima A**, Ichikawa K, Yasuda S, Mizuno N: Induction of plasminogen activator by UV light in mouse keratinocyte-derived cell line, PAM 212. *Dermatologica* 179 (suppl l): 133, 1989.

15. Ichikawa K, **Takashima A**, Yasuda S, Mizuno N: Enhanced rabbit skin plasmin activity by UV irradiation. *Dermatologica* 179 (suppl 1): 132, 1989.
16. **Takashima A**, Yamamoto K, Mizuno N: Photochemotherapy using 4,6,4'-trimethylangelicin in psoriasis treatment. *Photomed Photobiol* 11:155-162, 1989.

17. Matsunami E, **Takashima A**, Mizuno N, Jinno T, Ito H: Topical PUVA, etretinate and combined PUVA and etretinate for palmoplantar pustulosis: Comparison of therapeutic efficacy and influence of tonsillar and dental focal infection. *J Dermatol* 17:92-96, 1990.

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